

Claims

1. A piston-type accumulator having

(a) an accumulator housing in the form of a cylindrical tube (1) of a magnetizable material which defines an axial direction of the housing,

(b) a piston (3) which may be moved axially along a stroke path in the cylindrical tube (1) and which forms a movable separating element which separates two operating spaces (7, 9) from each other in the accumulator housing.

(c) a magnet configuration (29, 31, 35) mounted on the piston (3) and generating a field on the wall of the cylindrical tube (1), and

(d) a magnet field sensor system positioned on the exterior of the cylindrical tube (1) and having at least one Hall sensor (51) which is mounted on the exterior of the cylindrical tube and which responds to the field generated by the magnet configuration (29, 31, 35) on the piston (3) in order to determine the position of the piston (3) along the stroke path.

2. A piston-type accumulator as specified in claim 1, *wherein* two Hall-sensors (51) are mounted on the exterior of the cylindrical tube (1) at an axial distance from each other.

3. A piston-type accumulator as specified in claim 1 or 2, *wherein* the piston (3) is in the form of a non-magnetizable material and *wherein* the magnet configuration has a plurality of permanent magnets (35) which are mounted at a radial distance from the

circumference of the piston (3) in a row concentric with the longitudinal axis (5) of the piston (3) and with the same polarity relative to each other so that their polar axes extend in parallel with the longitudinal axis (5).

4. A piston-type accumulator as specified in claim 3, *wherein* the row of permanent magnets is in the form of circular cylindrical magnet elements (35) with polar axis extending along the axis of the cylinder, such magnet elements (35) being mounted so as to be at the same angular distances from each other around the circumference of the piston (3).
5. A piston-type accumulator as specified in claim 4, *wherein* the magnet elements (35) are retained between ring elements (29, 31) of magnetizable material adjoining their polar end surfaces, which ring elements (29, 31) surround the piston (3) in a circumferential section (21) which is of a diameter smaller than that of the circumferential section (23) guided on the interior wall of the cylindrical tube (1).
6. A piston-type accumulator as specified in claim 5, *wherein* the ring elements (29, 31) have, in their circumferential area (45) adjoining the magnet elements (35), an exterior diameter forming a radial spacing from the cylindrical tube (1) and, in the circumferential area (49) more remote from the magnet elements (49), an exterior diameter approximating that of the cylindrical tube (1) by which the ring elements (29, 31) form pole shoes for introduction of magnetic flux into the wall of the cylindrical tube (1).
7. A piston-type accumulator as specified in claim 6, *wherein* the piston (3) forms, in the area of transition between the circumferential section (23) guided on the cylindrical tube (1) and the circumferential section (21) smaller in diameter than that of the circumferential section 23, a shoulder surface (43) as contact surface for a sealing element (41) with which the shoulder surface (43) of the opposite side of the adjacent ring element (31) is in contact.

8. A piston-type accumulator as specified in claim 7, *wherein* the ring elements (29, 31) are held together and in contact with the sealing element (41) by a threaded ring (37) which is screwed onto an exterior threading (39) on the circumferential section (21), of smaller diameter, of the piston (3).
9. A piston-type accumulator as specified in one of claims 1 to 8, *wherein* the Hall sensors (51) are mounted on the cylindrical tube (1) in axial positions which correspond to a given position of the piston (3) or to the other given position of the piston (3) in movement of such piston (3) over the total stroke path.
10. A piston-type accumulator as specified in claim 9, *wherein* the respective specific position corresponds to the possible end positions of the piston (3).